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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 62480A	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA416)	
International application No. PCT/US 03/13311	International filing date (day/month/year) 29.04.2003	Priority date (day/month/year) 06.05.2002
International Patent Classification (IPC) or both national classification and IPC C08F10/00		
Applicant UNION CARBIDE CHEMICALS & PLASTICS ...		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☒ Certain observations on the international application

Date of submission of the demand 03.11.2003	Date of completion of this report 19.07.2004
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/US 03/13311**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-19 as originally filed

Claims, Numbers

1-8 as originally filed

Drawings, Sheets

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 1-3,5-8 (in part)

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 1-3,5-8 (in part)

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4 (in full); 8 (in part).
	No: Claims	1-3,5-7 (in part).
Inventive step (IS)	Yes: Claims	1-3,5-8 (in part); 4 (in full).
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-3,5-8 (in part); 4 (in full).
	No: Claims	

2. Citations and explanations

see separate sheet

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VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

According to the ISA, only the following subject matter has been searched:

1. The subject matter of claims 1-8 insofar as it relates to alpha-amino substituted 2-alkylpyridine compounds. Namely, claims 1-3,5-8 (in part) and claim 4 (in full).

All other subject matter of the present application has not been searched and therefore only the above mentioned subject matter under point 1 can be the subject of examination (Rule 66.1(e) PCT).

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The following documents (D1-2) will be referred to:

D1: WO-A-0125297

D2: EP-A-0589474

1. The subject matter of claims 1-8 of the present application is not considered inventive for the following reasons: D1, considered the closest prior art, describes imine internal electron donors (IEDs) such as py-CH=NMe , and $\text{Py-C(Ph)=N-Ph-2,6-iPr}_2$ used in catalytic compounds comprising MgCl_2 and TiCl_4 (see egs 2,5-7). Similar EDs (see eg 1) are employed in propylene polymerisation (see eg 7). The pyridyl imines are disclosed as olefin polymerisation catalysts when employed as such in the presence of alkylaluminiums (see claims 19 and 21). Present claims 1-8 differ in that an amino group replaces the imino groups of D1 (feature 1). The technical effect of this feature is has not been demonstrated over D1. Therefore, the objective problem can only be formulated as to provide alternative catalysts for olefin polymerisation. The solution proposed in claims 1-8 of the present application cannot be considered as involving an inventive step because feature 1 is disclosed in D2 (see egs 1-5) where chelating 1,3-diamino EDs are employed. The skilled person would regard it as a normal option to combine the teachings of D2 with those of D1 in order to solve the problem of the present application.

Re Item VIII

Certain observations on the international application

The following objections are made under Art. 6 (PCT):

1. Claim 1: the term "selectivity control agent" is meaningless as the nature of the selectivity has not been defined. Anyway, the term appears to describe a result to be achieved (PCT GL C-III,4.7).
2. Claim 3: in formula (I), Ra is defined as having 6-30 carbon atoms, therefore, it cannot be "halo".
3. Claim 3: in formula (I), Rc can only be a hydride, otherwise the alpha-amino group of claim 1 is not defined. Furthermore what a "cationic organometal ligand" may be is unclear.
4. Claim 4 the first compound mentioned therein, namely the "(..amino)propane" does not define an alpha-amino substituted 2-alkylpyridine.
5. Claim 5 : f cannot range from 2-100 if d were to be 1. All these values must be made dependent on the number of metal elements present.
6. Claim 8: the "naphthyl" compound mentioned in this claim appears to be an amine, and therefore cannot be "alpha-imino substituted" as mentioned beforehand in this claim.